



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/521,150	07/29/2005	Alexander Gorban	22193-00008-US1	9038
30678 7590 12/06/2007 CONNOLLY BOVE LODGE & HUTZ LLP 1875 EYE STREET, N.W. SUITE 1100 WASHINGTON, DC 20036			EXAMINER DAVIS, MARY ALICE	
			ART UNIT 3748	PAPER NUMBER
			MAIL DATE 12/06/2007	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

**Office Action Summary**

Application No.

10/521,150

Applicant(s)

GORBAN, ALEXANDER

Examiner

Mary A. Davis

Art Unit

3748

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 01 October 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 January 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. ***Claims 1-7 and 9-14 are rejected under 35 U.S.C. 102(b) as being anticipated by BRODOV ET AL (Russian Patent No. 2,140,018 C1).***

Regarding claim 1, BRODOV ET AL discloses:

- A method of transforming a motion in a volume screw machine, said machine having at least two sets of conjugated elements (28, 27; 5,1), each set comprising a first element (28, 5) having an inner screw surface (29, 5) centered around a first axis (passing through centre O) and a second element (27,1) having an outer screw surface (27, 1) centered around a second axis (passing through centers O<sub>2</sub>, O<sub>1</sub>), wherein an inner set (1,5) of conjugated elements is placed coaxially in at least one cavity of the second element of an outer set (28,27, see Figure 2) of conjugated elements, wherein the first and second axes (passing through centers O; O<sub>1</sub>, O<sub>2</sub>) are parallel (Page 6, lines 13-21; Page 10, lines 21-30) and wherein at least one of said first and second elements of each set is rotatable about its axis (Page 11, lines 8-11), said method comprising:  
creating a rotary motion of at least one element in each set (Page 11, lines 1-11).

Regarding claim 2, BRODOV ET AL discloses:

- the rotary motion of said at least one element in each set is synchronized in such a manner as to provide for a dynamically balanced machine (Page 11, lines 7-13; Page 6, lines 22-23, it is inherent that if the rotary motion is synchronized that the machine is dynamically balanced).

Regarding claim 3, BRODOV ET AL discloses:

- each set comprises an element centered about an axis which coincides with a principal axis of the machine (see Figure 2), and wherein the respective second element of each set is centered about an axis which is not coinciding with the principal axis (see Figure 2 showing centers  $O_1$ ,  $O_2$ ), wherein the non-coinciding axes are rotated in such a manner about the principal axis as to maintain the distance relationship of the non-coinciding axes with regard to each other and with regard to the principal axis (see Figure 2, Page 11, lines 7-13 ( $\theta_2$ ). It is inherent that an element that has a planetary motion around another element that there would be a distance relationship maintained with regard to the other element.)

Regarding claim 4, BRODOV ET AL discloses:

- said first axes of each set of conjugated elements coincide, whereas the second axes are non-coinciding, or that said second axes of each set of conjugated elements coincide whereas the first axes are non-coinciding (see Figure 2), and that the non-coinciding axes (passing through centers  $O_1$ ,  $O_2$ ) are rotated in such a manner about the coinciding axes (passing through centre  $O$ ) as to maintain the distance relationship of the non-coinciding axes (passing through centers  $O_1$ ,

$O_2$ ) with regard to each other and with regard to the coinciding axes (passing through center O).

Regarding claim 5, BRODOV ET AL discloses:

- a motion of the elements of different sets of conjugated elements about their respective axes is synchronized (the apparatus being synchronized is disclosed, see Page 11, lines 7-13).

Regarding claim 6, BRODOV ET AL discloses:

- a first group of rotations comprising:
  - a) the rotation of the first element of one set of conjugated elements about the first axis (Page 11, lines 7-13, see Figure 2, it is inherent that the first element rotates about a first axis ( $O_1$ )),
  - b) the rotation of the second element of one set of conjugated elements about the second axis (see Figure 2, it is inherent that the second element rotates about a second axis ( $O_2$ )), and
- c) a rotation of the first axis about the second axis or a rotation of the second axis about the first axis, at least two rotations are mechanically synchronized each with a respective one of a second group of rotations comprising (Page 11, lines 7-13)
- d) the rotation of the first element of another set of conjugated elements about the first axis (see Figure 2 ( $O_1$ )), and
- e) the rotation of the second element of another set of conjugated elements about the second axis (see Figure 2 ( $O_2$ )).

Art Unit: 3748

Regarding claim 7, BRODOV ET AL discloses:

- first and second sets of conjugated elements each comprise a planetarily moving element, and wherein the rotations of the axes of the planetarily moving elements of the first and second sets are synchronized, and wherein the rotations of the planetarily moving elements about their respective axes are synchronized (Page 11, lines 7-13, Page 15, lines 18-31).

Regarding claim 9, BRODOV ET AL discloses:

- a first set of conjugated elements comprises a planetary motion and a second set of conjugated elements comprises a differential motion, and wherein rotations of the axes of the first elements of the first and second sets are synchronized, and wherein rotations of the axes of the second elements of the first and second sets are synchronized (Page 11, lines 7-13).

Regarding claim 10, BRODOV ET AL discloses:

- a first set of conjugated elements comprises a planetary motion and a second set comprises a synchronization coupling link for providing a differential motion, and wherein a rotation of the axis of an element of the first set of conjugated elements is synchronized with a rotation of the synchronizing coupling link of the second set of conjugated elements (Page 11, lines 7-13).

Regarding claim 11, BRODOV ET AL discloses:

- curvilinear inner surfaces (29, 31, near 1 of Figure 2) of the first elements (28, 27, 5) are put into mechanical contact with curvilinear outer surfaces (27, 30, 1) of

the second elements (27, 5, 1), thereby carrying out said motion transfer (Page 10, line 15 - Page 11, line 13).

Regarding claim 12, BRODOV ET AL discloses:

- A volume screw machine of rotary type, comprising at least two sets of conjugated elements (28, 27; 5, 1), each set comprising a first element (28, 5) having an inner screw surface (29, 5) and enclosed therein a second element (27,1) having an outer screw surface (27, 1), said machine comprising an outer set of conjugated elements (28, 27) and at least one inner set of conjugated elements (5,1), wherein each inner set of conjugated elements (5,1) is placed in a cavity of an element (27) of another set of conjugated elements (28, 27).

Regarding claim 13, BRODOV ET AL discloses:

- rotatable elements of the different sets of conjugated elements are mechanically coupled to each other such as to provide for a synchronized motion of said elements (Page 11, lines 7-13).

Regarding claim 14, BRODOV ET AL discloses the claimed limitations as discussed above (see claims 1 and 3).

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**4. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over BRODOV ET AL in view of legal precedent.**

BRODOV ET AL discloses the method to generate differential and planetary motion in conjugate elements (Page 2, line 3+). However, BRODOV ET AL fails to disclose two sets of conjugate elements comprising differential motion. BRODOV ET AL teaches how to generate differential motion in a single set of conjugate elements (Page 8, line 15+). It would have been obvious to one having ordinary skill in the art at the time the invention was made to have differential motion in both sets of conjugate elements, since it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art. *St. Regis Paper Co. v. Bemis Co.*, 193 USPQ 8.

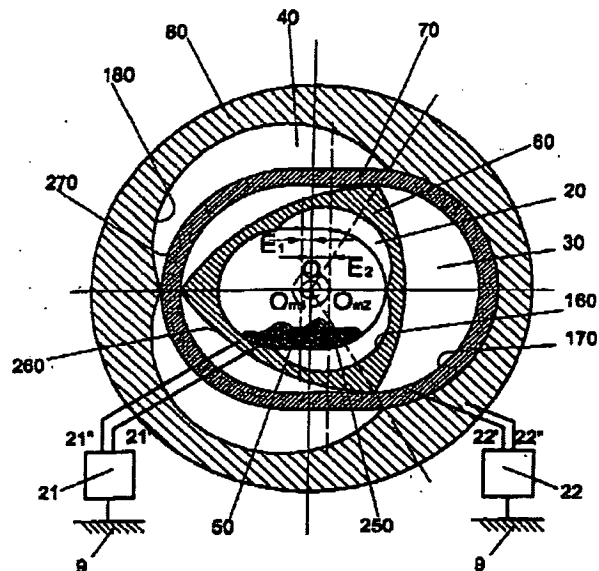
***Response to Arguments***

5. Applicant's arguments filed 2 October 2007 have been fully considered but they are not persuasive.

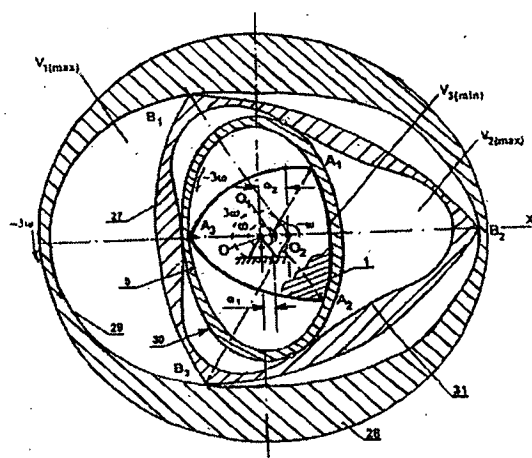
6. Applicant argues with regards to the 102(b) rejection of claims 1 and 12, from which claims 2-11 and 13 depend, that BRODOV ET AL does not disclose generating motion in a volumetric screw machine. Applicant argues that BRODOV ET AL does not disclose generating in a volumetric screw machine since it is "two-dimensional". The Examiner respectfully disagrees. The use of the word "screw" does not further limit the apparatus since the Examiner considers this terminology to be the applicant being their own lexicographer, because no figure reveals what the applicant is adding by the word "screw", and BRODOV ET AL meets all the limitations limiting the apparatus.



Furthermore, the Examiner is unclear on what the applicant is arguing that BRODOV ET AL is "two dimensional" versus the current application. The single Figure provided by the applicant is placed next to the Figure 2 of BRODOV ET AL below, which the applicant considers BRODOV ET AL to be a "two-dimensional" volumetric machine, however, the applicant only shows a "two-dimensional" volumetric machine (see the Figures side by side below).



Applicant's single Figure 1



BRODOVE ET AL Figure 2

7. Applicant further argues with regards to the 103(a) rejection of claim 8 that BRODOV ET AL does not disclose a volumetric screw machine. The applicant further argues the difference between a screw machine and a two-dimensional machine with respect to fluid movement thru the apparatus. In the specification and drawings, the applicant does not point out that their apparatus operates as a "screw machine" with the specific operation that the applicant argues (i.e. fluid movement takes place along the

direction of the rotation axis). The Examiner construes that the applicant was being their own lexicographer and that the limitations to the screw machine are met by BRODOV ET AL (see above for the comparison of the single Figure provided by the applicant and BRODOV ET AL).

### ***Conclusion***

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

### ***Communication***

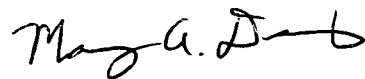
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mary A. Davis whose telephone number is (571) 272-9965. The examiner can normally be reached on Monday thru Thursday; 6:45 am - 5:15 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Denion can be reached on (571) 272-4859. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 3748

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

MAD  
12/3/07



/Mary A. Davis/  
Patent Examiner Art Unit: 3748



THOMAS DENION  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 3700